

We claim:

1. A process of recovering hydrocarbons heavier than methane from liquefied natural gas (LNG) comprising,
  - 5 a) pumping liquid, low pressure LNG to a pressure of greater than 100 psia;
  - b) splitting the pressurized liquid LNG from step a) into first and second portions;
  - c) directing the first portion of pressurized liquid LNG from step b) to a cold box
- 10 where it is heat exchanged to increase its temperature;
- d) bypassing the cold box with the second portion of pressurized liquid LNG from step b) and directing it to a recovery tower as a first reflux;
- e) directing the heat exchanged first portion of pressurized liquid LNG from step c) to a recovery tower where, in combination with the first reflux and a second reflux, a
- 15 recovery tower overhead is produced along with a recovery tower bottoms;
- f) pressurizing the recovery tower bottoms and cross heat exchanging the pressurized recovery tower bottoms with deethanizer overhead;
- g) directing the cross heat exchanged pressurized recovery tower bottoms to a deethanizer;
- 20 h) removing hydrocarbons heavier than methane as deethanizer bottoms;
- i) directing cross heat exchanged deethanizer overhead as the second reflux to the recovery tower; and
- j) removing the recovery tower overhead from the recovery tower and compressing the recovery tower overhead prior to introduction into the cold box and heat exchanging
- 25 with the first portion of pressurized liquid LNG to produce a re-liquefied pressurized LNG.

2. The process of claim 1 further comprising the step of heating and recirculating the deethanizer bottoms stream.

5 3. The process of claim 1 further characterized in that a boil-off vapor is combined with the recovery tower overhead.

4. A process of recovering hydrocarbons heavier than methane from liquefied natural gas (LNG) comprising,

- 10 a) pumping liquid, low pressure LNG to a pressure of greater than 100 psia;
- b) directing the pressurized liquid LNG from step a) to a cold box where it is heat exchanged to increase its temperature;
- c) directing the heat exchanged pressurized liquid LNG from step b) to a recovery tower where, in combination with a first and second reflux, a recovery tower overhead is produced along with a recovery tower bottoms;
- 15 d) pressurizing the recovery tower bottoms and cross heat exchanging the pressurized recovery tower bottoms with deethanizer overhead;
- e) directing the cross heat exchanged pressurized recovery tower bottoms to a deethanizer;
- 20 f) removing hydrocarbons heavier than methane as deethanizer bottoms;
- g) directing cross heat exchanged deethanizer overhead as a second reflux to the recovery tower;

h) removing the recovery tower overhead from the recovery tower and compressing the recovery tower overhead prior to introduction into the cold box and heat exchanging with the first portion of pressurized liquid LNG to produce a re-liquefied pressurized LNG; and

5 i) separating a portion of the re-liquefied pressurized LNG for use as the first reflux.

5. The process of claim 4 further comprising the step of heating and recirculating the deethanizer bottoms.

10 6. The process of claim 3 further characterized in that a boil-off vapor is combined with the recovery tower overhead.

7. A process of recovering hydrocarbons heavier than methane from liquefied natural gas (LNG) comprising,

15 a) pumping liquid, low pressure LNG to a pressure of greater than 100 psia;  
b) directing the pressurized liquid LNG from step a) to a cold box where it is heat exchanged to increase its temperature;  
c) directing the heat exchanged pressurized liquid LNG from step b) to a recovery 20 tower where, in combination with a reflux, a recovery tower overhead is produced along with a recovery tower bottoms;  
d) pressurizing the recovery tower bottoms and cross heat exchanging the pressurized recovery tower bottoms with deethanizer overhead;  
e) directing the cross heat exchanged pressurized recovery tower bottoms to a 25 deethanizer;

- f) removing hydrocarbons heavier than methane as deethanizer bottoms;
- g) directing cross heat exchanged deethanizer overhead as the flux to the recovery tower; and
- h) removing the recovery tower overhead from the recovery tower and compressing

5 the recovery tower overhead prior to introduction into the cold box and heat exchanging with the first portion of pressurized liquid LNG to produce a re-liquefied pressurized LNG.

8. The process of claim 7 further comprising the step of heating and recirculating  
10 the deethanizer bottoms.

9. The process of claim 5 further characterized in that a boil-off vapor is combined with the recovery tower overhead.

15 10. The process of claim 5 further characterized in that the compressed recovery tower overhead is pre-chilled prior to introduction into the cold box.

11. A process of recovering hydrocarbons heavier than methane from liquefied natural gas (LNG) comprising,  
20 a) pumping liquid, low pressure LNG to a pressure of greater than 100 psia;  
b) directing the pressurized liquid LNG from step a) to a cold box where it is heat exchanged to increase its temperature;

- c) directing the heat exchanged pressurized liquid LNG from step b) to a recovery tower where, in combination with a reflux, a recovery tower overhead is produced along with a recovery tower bottoms;
- d) pressurizing the recovery tower bottoms

5    e) separating the pressurized recovery bottoms into a first and second portion

- f) cross heat exchanging the first portion of pressurized recovery tower bottoms with deethanizer overhead and directing the cross heat exchanged pressurized recovery tower bottoms to a deethanizer;
- g) directing the second portion of pressurized recovery tower bottoms without heat

10    10    exchanging to the deethanizer as reflux;

- h) removing hydrocarbons heavier than methane as deethanizer bottoms;
- i) directing cross heat exchanged deethanizer overhead as the flux to the recovery tower; and
- j) removing the recovery tower overhead from the recovery tower and compressing

15    15    the recovery tower overhead prior to introduction into the cold box and heat exchanging with the first portion of pressurized liquid LNG to produce a re-liquefied pressurized LNG.

12. The process of claim 11 further comprising heating and recirculating the  
20    deethanizer bottoms.

13. The process of claim 8 further characterized in that a boil-off vapor is combined with the recovery tower overhead.